

CURRICULUM VITAE



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1. ACADEMIC BACKGROOUND

- PhD. in Rock Mechanics, 2004-2008, Engineering Geology and Geophysics Group, Royal Institute of Technology (KTH), Stockholm, Sweden.
- MSc. in Mining Engineering, 1993-1996, Mining Engineering Department, Amirkabir University of Technology-Tehran Polytechnic (AKU), Tehran, Iran.
- BSc. in Mining Engineering, 1989-1993, Department of Mining Engineering, Isfahan University of Technology (IUT), Isfahan, Iran.

2. RESEARCH INTERESTS

- Numerical modeling in fractured rocks (Discrete Fracture Network (DFN)-Discrete Element Method (DEM))
- Coupling process in rock masses (Bio-Chemo-Thermo-Hydro-Mechanical (BCTHM))
- Underground excavation and support design
- Rock slope stability
- Rock block stability (Kinematics and Dynamics methods)
- Instrumentation in rocks

3. PUBLICATIONS

3.1. International Journal

1. **Baghbanan A**; Parvazdavani M, Abbasi S. Investigation of Fracture Geometry in Hydraulic Fracturing on Gas Reservoir Well Production Enhancement. *Petroleum Science and Technology*, 32:150–157, 2014.
2. Khani A., **Baghbanan A.**, Hashemolhosseini H. Numerical investigation of the effect of fracture intensity on deformability and REV of fractured rock masses, *Int J Rock Mech Min Sci*, 2013, 63, 104-112
3. Khani A., **Baghbanan A.**, Norouzi S., Hashemolhosseini H. Effects of fracture geometry and stress on the strength of a fractured rock mass, *Int J Rock Mech Min Sci*, 2013, 60, 345-352.
4. Jing L, Min KB, **Baghbanan A**, Zhao Z. Understanding coupled stress, flow and transport processes in fractured rocks. *Geosystem Engineering*, 2013, 16 (1): 2-25.
5. Eftekhari M, **Baghbanan A**, Bagherpour R, The effect of fracture patterns on penetration rate of TBM in fractured rock mass using probabilistic numerical approach. *Arabian Journal of Geosciences*, 2013, 1-11.
6. Norouzi S., **Baghbanan A.**, Khani A. Investigation of Grain Size Effects on Micro/Macro-Mechanical Properties of Intact Rock Using Voronoi Element - Discrete Element Method Approach. *Particulate Science and Technology: An International Journal*. 2013 (31): 507-514.
7. Eftekhari M., **Baghbanan. A.**, Bagherpour R. Numerical modeling of the effect of geometrical parameters of fractures on penetration rate of TBM in fractured rock mass. *Iranian Journal of Mining Engineering (IRJME)* 2013, 8 (18), 1-12.
8. Eftekhari M., **Baghbanan. A.**, Bagherpour R. The effect of operational parameters on penetration rate of a TBM using Artificial Neural Networks. *Tunneling and Underground Space Engineering (TUSE)*. 2013 (1), 29-42.
9. A Babanouri N, Karimi Nasab S, **Baghbanan A**, Mohamadi H. The effect of over-consolidation on the shear behavior of rock joints. *Int J Rock Mech Min Sci* 2011, 48, 1283-1291.
10. Amrollahi H, **Baghbanan A**, Hashemolhosseini H. Measuring fracture toughness of crystalline marbles under modes I and II and mixed mode I-II loading conditions using CCNBD and HCCD specimens *Int J Rock Mech Min Sci*, 2011, 48, 1123-1134.

11. **Baghbanan A**, Jing L. Effects of size and stress on deformability and strength of fractured rocks with correlated fracture aperture and length. *Int J Rock Mech Min Sci* (under revision)
12. **Baghbanan A**, Jing L. Stress effects on permeability in fractured rock mass with correlated fracture length and aperture. *Int J Rock Mech Min Sci* 2008;45:1320-1334.
13. **Baghbanan A**, Jing L. Hydraulic properties of fractured rock masses with correlated fracture length and aperture. *Int J Rock Mech Min Sci* 2007;44(5):704-719.
14. Nord G, Bagheri M, **Baghbanan A**, Stille H. Design consideration of large caverns by using advanced drilling equipment. *Felsbau* 2007; 25(5):131-136.

3.2. International Conference

1. Joolaei A., **Baghbanan A.**, Hashemolhoseini H. Three Dimensional Fluid Flow Modeling in Fractured Rocks using Numerical Pipe Network Approach. 9th International Congress on Civil Engineering, May 8-10, 2012 Isfahan University of Technology, Isfahan, Iran.
2. Mohajerani S., **Baghbanan A.**, Rahimi M., Hashemolhoseini H., Bagherpour R. Investigation of Grotability of fractured rock masses using GroutIUT2D code. 7th Iranian Civil Engineering Conference, 2013, Zahedan, Iran
3. Dayani S, **Baghbanan A**, Karami M. Evaluating the permeability tensor of a fractured rock mass using effective medium theory. EUROCK2012, May 28-30, 2012; Stockholm, Sweden.
4. Namdari S, J.Habibi M, **Baghbanan A**. A comparison between permeability of single porosity and dual porosity medium using DFN and Dual fracture method (DFM). EUROCK2012, May 28-30, 2012; Stockholm, Sweden.
5. Khani AR, **Baghbanan A**, Hashemalhouseini H. The effect of fracture network intensity on elastic strength of fractured rock masses - A numerical study. EUROCK2012, May 28-30, 2012; Stockholm, Sweden.
6. Rezaei B, Kefayati S, **Baghbanan A**. Dentition technique in rock slope stability. 14th Geological Association Conference, Sep. 16-18, 2010.

7. **Baghbanan A**, Joolaei A. 3D discrete fracture network generation. 14th Geological Association Conference, Sep. 16-18, 2010.
8. Babanouri N, Karimi Nasab S, **Baghbanan A**, Mohamadi H. Over-consolidation effect on shear behavior of single rock fractures. 3rd Iranian Mining Engineering Conference, Yazd Univ., Bahman 2010, p 1174-1183.
9. Amrollahi H, **Baghbanan A**, Safaei S M M A, Majlesy M J. A new method for determining grain size distribution of rocks. 3rd Iranian Mining Engineering Conference, Yazd Univ., Bahman 2010, p.1595-1601.
10. Dayani S, **Baghbanan A**. Effect of Aperture Distribution on Network Fracture. Permeability Using EMT Approach. 3rd Iranian Mining Engineering Conference, Yazd Univ., Bahman 2010, p 1615-1621.
11. Molla Yousefi A, **Baghbanan A**, Eshraghi H. Statistical Analysis of Induced Fractures and In-Situ Stresses Using FMI Log Data. 3rd Iranian Mining Engineering Conference, Yazd Univ., Bahman 2010, p 1519-1521.
12. **Baghbanan A**, Sookhak A, Hashemalhosseini H, Bagheri M. UDEC Simulation of Block Stability Analysis around a Large Cavern. ICADD9, Nanyang Technological University, Singapour, November 25-27, 2009, p. 445-452.
13. **Baghbanan A**, Dayani S. An Uncertainty Analysis for Calculating Fracture Network Permeability using Effective Medium Theory. EUROCK2009, October 29-31, 2009; Cavata, Croatia, p221-226.
14. Amrollahi H, **Baghbanan A**. Effects of grain size distribution on KIC using CCNBD and HCCD specimens. EUROCK2009, October 29-31, 2009; Cavata, Croatia, p 209-213.
15. **Baghbanan A**, Sookhak A, Hashemalhosseini H, Bagheri M. Block Stability Analysis around a Large Cavern using Probabilistic Approach, EUROCK2009, October 29-31, 2009; Cavata, Croatia, p 435-440.
16. Bagheri M, **Baghbanan A**, Stille H. Model uncertainty in calculations of block stability using Kinematic Limit Equilibrium and Discrete Fracture Network-Distinct Element Method approaches. ARMA 8-343, 9 p; 2008.
17. **Baghbanan A**, Jing A. Study of Deformability of Fractured Rocks with Correlated Fracture Length and Aperture. In Proc. of 5th Asian Rock Mechanics Symposium (ARMS5); Nov. 24-26, 2008; Tehran, Iran; pp: 1347-1354.

18. Jing L. **Baghbanan A.** Stress and scale-dependency of the hydraulic properties of fractured rocks. In: Proc. ISRM symposium for young scholars 2008, Beijing China, May 12-15, 2008. Published in Boundaries of Rock Mechanics; Cai and Wang (edt); 2008 Taylor & Francis Group London, ISBN 978-0-415-46934-0; pp: 41-48.
19. **Baghbanan A.** Deformability of rock fractures with correlated fracture length and aperture. In: Proc 3rd Iranian Rock Mechanics Conference, Tehran, Iran 2007, p 1155-1164.
20. **Baghbanan A**, Jing L. Scale and stress effects on permeability tensor of fractured rocks with correlated fracture length and aperture. Thermo-Hydro-Mechanical and chemical coupling in geomaterials and applications; In Proceedings of the 3rd International Symposium GeoProc'2008; Edited by Nicolas Burlion and Jian-Fu Shao, Polytech-Lille, France. ISBN: 9781848210431. Publication Date: May 2008 Hardback 736 p; pp: 439-447.
21. Rahman, M.T., **Baghbanan, A.**, Buccheri, M., Kizito F., Ntiamoah B., Bhattacharya, P., Thunvik, R. (2006): Development of numerical model for contaminant transport in the ground water system of the Lake Kiyanja watershed of Uganda. In: Ramanathan, AL., Bhattacharya P., Chandrashekharam, D., Keshari, A.K., Thangarajan, M. & Bundschuh, J. (Eds.) Volume of Abstracts, 2nd International Groundwater Conference, Groundwater for Sustainable Development: Problems, Perspectives and Challenges, February 1-4, 2006 New Delhi, India: 288.
22. **Baghbanan A**, Min KB, Jing L. Scale effect on hydraulic properties of fractured rock mass by correlated fracture length and aperture. In: Proc EURO-Conference on Rock Physics and Geomechanics – Integration and application to reservoirs and repositories 2005, Oléron, France, pp.72.

3.4. Chapter in Books

1. Advances in Engineering Research. Volume 2. Victoria M. Petrova, Editor. Chapter 6: The Dependence of Shear Behavior of Rock Fractures on the Normal Loading-Unloading History. Babanouri N, Karimi Nasab S and **Baghbanan A.** NOVA Publisher, pp. 383-414.

2. Rock Mechanics, New Research. Abbie M and Bedford J.S. Editors. Chapter 2: Stress and Scale-Dependency of the Hydro-mechanical Properties of Fractured Rock. Jing L, Min K B and **Baghbanan A.** NOVA Publisher, July 2009, p 109-165.

4. TEACHING EXPERIENCES

4.1 Graduate level

- Mining Management, IUT, 2012 to Now.
- Tunneling, IUT, 2012 to now.
- Deep Drilling, IUT, 2011 to now.
- Special issues in Rock Mechanics. IUT, 2011 to now.
- Elasticity in Rock Mechanics, IUT, 2009 to now.
- Analytical and Numerical Modeling in Fractured Rocks (DEM for Rock Engineering), IUT, 2009 to now.
- Advanced Rock Mechanics, IUT, 2008 to now.
- Engineering Geology, Teaching assistant at KTH, 2004-2008.
- Environmental Geology, Teaching assistant at KTH, 2004-2008.
- Environmental Geology and Geophysics, Teaching assistant at KTH, 2004-2008.

4.2 Undergraduate level

- Computer Programming in Mining Engineering, IUT, 2009 to now.
- Rock Mechanics, IUT, 1996-2003 and 2008 to now.
- Rock Mechanics Lab., IUT, 1996-2003 and 2008 to now .
- Drilling Engineering, IUT, 1996-2003 and 2008 to now .

5. COMPUTER SKILLS

- Numerical Codes (Itasca Codes – UDEC, 3DEC, PFC2D,3D, Flac2D,3D)
- Block Stability Analysis Software (UNWEDGE-SWEDGE)
- Another Software (Dips, Winsurf, Phases, Slide)
- Calculation and Statistical Software (FORTRAN, Minitab, Maple, SPSS, Tecplot)
- Office (Word, Excel, PowerPoint)

6. LANGUAGE SKILLS

- Persian (Mother Tongue)
- English (Comfortable in writing and fluent in speaking and communication)

7. WORK EXPERIENCES

- Department of Mining Engineering, Isfahan Univ. of Tech. (IUT), Iran, Dec. 2013-Now, Associate Professor in Rock Mechanics.
- Department of Mining Engineering, Isfahan Univ. of Tech. (IUT), Iran, June 2010-Nov. 2013, Head of Department.
- Department of Mining Engineering, Isfahan Univ. of Tech. (IUT), Iran, June 2008-Dec. 2013, Assistant Professor in Rock Mechanics field of study.
- EGG/LWR/KTH/Sweden, Researcher and PhD student, 2004-June 2008, Research subject: Numerical modeling of Hydro-Mechanical Coupling process in fractured rock masses.
- Department of Mining Engineering, Isfahan Univ. of Tech. (IUT), Iran, 1996-2004, Researcher & Lecturer.
- Camfan-Sepahan Eng. Co. (Consulting Mining Eng. Co.), 1994-1996, Consulter for Mining Design and Rock Mechanics projects (Shaft and Tunnel's Projects).

8. REFEREES

- Prof. Lanru Jing (Main advisor of PhD program), Associate Professor, Engineering Geology and Geophysics Group/KTH. Teknikringen 72, S 10044, Sweden, lanru@kth.se
- Prof. Robert W Zimmerman (Second advisor of PhD program), Department of Earth Science and Engineering, Imperial College, London, SW7 2AZ, UK, r.w.zimmerman@imperial.ac.uk
- Prof. Ove Stephansson, GeoForschungsZentrum Potsdam, Room D427, Telegrafenberg, DE-14473 Potsdam, Germany, ove@gfz-potsdam.de .